

**Translation**

PATENT COOPERATION TREATY

**PCT**

PCT/FR2003/000065



**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

(PCT Article 36 and Rule 70)

|   |   |   |
|---|---|---|
| Applicant's or agent's file reference   | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |   |
| International application No.<br>PCT/FR2003/000065  | International filing date ( <i>day/month/year</i> )<br>10 janvier 2003 (10.01.2003)   | Priority date ( <i>day/month/year</i> )<br>14 janvier 2002 (14.01.2002) |
| International Patent Classification (IPC) or national classification and IPC<br>H01Q 1/24 |   |   |
| Applicant<br>THOMSON LICENSING S.A et al.   |   |   |

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|---|--|
| <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>2</u> sheets.</p>   |  |
| <p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p> |  |

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|--|--|
| Date of submission of the demand<br>14 juillet 2003 (14.07.2003) | Date of completion of this report<br>03 February 2004 (03.02.2004) |
| Name and mailing address of the IPEA/EP                          | Authorized officer   |
| Facsimile No.  | Telephone No.  |

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR2003/000065

## I. Basis of the report

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

☐ the international application as originally filed.

☒ the description, pages 1-10, as originally filed,  
pages \_\_\_\_\_, filed with the demand,  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

☒ the claims, Nos. \_\_\_\_\_, as originally filed,  
Nos. \_\_\_\_\_, as amended under Article 19,  
Nos. \_\_\_\_\_, filed with the demand,  
Nos. 1-11, filed with the letter of 14 January 2004 (14.01.2004),  
Nos. \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

☒ the drawings, sheets/fig 1/5-5/5, as originally filed,  
sheets/fig \_\_\_\_\_, filed with the demand,  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

2. The amendments have resulted in the cancellation of:

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/fig \_\_\_\_\_

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

|                               |        |      |     |
|-------------------------------|--------|------|-----|
| Novelty (N)                   | Claims | 1-11 | YES |
|                               | Claims |      | NO  |
| Inventive step (IS)           | Claims | 1-11 | YES |
|                               | Claims |      | NO  |
| Industrial applicability (IA) | Claims | 1-11 | YES |
|                               | Claims |      | NO  |

**2. Citations and explanations**

Reference is made to the following document:

D1: US-A-5 402 136 (GOTO NAOHISA ET AL)  
28 March 1995 (1995-03-28).

1. Contrary to the requirements of PCT Rule 5.1(a)(ii), the description does not indicate the relevant prior art disclosed in document D1, nor does it cite said document.

2. Document D1, which is considered to be the prior art closest to the subject matter of claim 1, describes (the references between parentheses apply to said document):

a radiation-diversity device for receiving and/or transmitting electromagnetic waves (figure 1) comprising, on a common substrate (1), at least one first slot-type antenna (5) electromagnetically coupled to a first feeder line (6, 11) and a second antenna (4) with radiation parallel to said substrate, said second antenna being positioned inside the curve forming said first antenna (figure 1) and connected to a second feeder line

(16), wherein said first and second feeder lines are connected to electromagnetic wave-processing means via a switching means.

It follows that the subject matter of claim 1 differs from this known device in that:

the slot is shaped like a closed curve with a perimeter equal to  $k'\lambda_s$ , wherein  $\lambda_s$  is the wavelength in the slot at the operation frequency and  $k'$  is an integer.

It follows that the subject matter of claim 1 is novel (PCT Article 33(2)).

The problem that the present invention is intended to solve can therefore be considered to be that of overcoming fading caused by multipaths, while proposing a radiation diversity device with a compact structure.

This problem is solved by using a single slot with a perimeter equal to  $k'\lambda_s$  instead of three slots excited at a phase difference of  $120^\circ$ , as indicated in the prior art. As a result, the solution proposed in claim 1 of the present application is considered to involve an inventive step (PCT Article 33(3)).

3. Claims 2-11 are dependent on claim 1 and therefore also fulfil, as such, the PCT requirements of novelty and inventive step.

4. Claim 1 has been drafted in two parts. However,

some of the features should not be included in the characterising portion since they are disclosed, in combination with the features in the preamble, in document D1 (PCT Rule 6.3(b)).